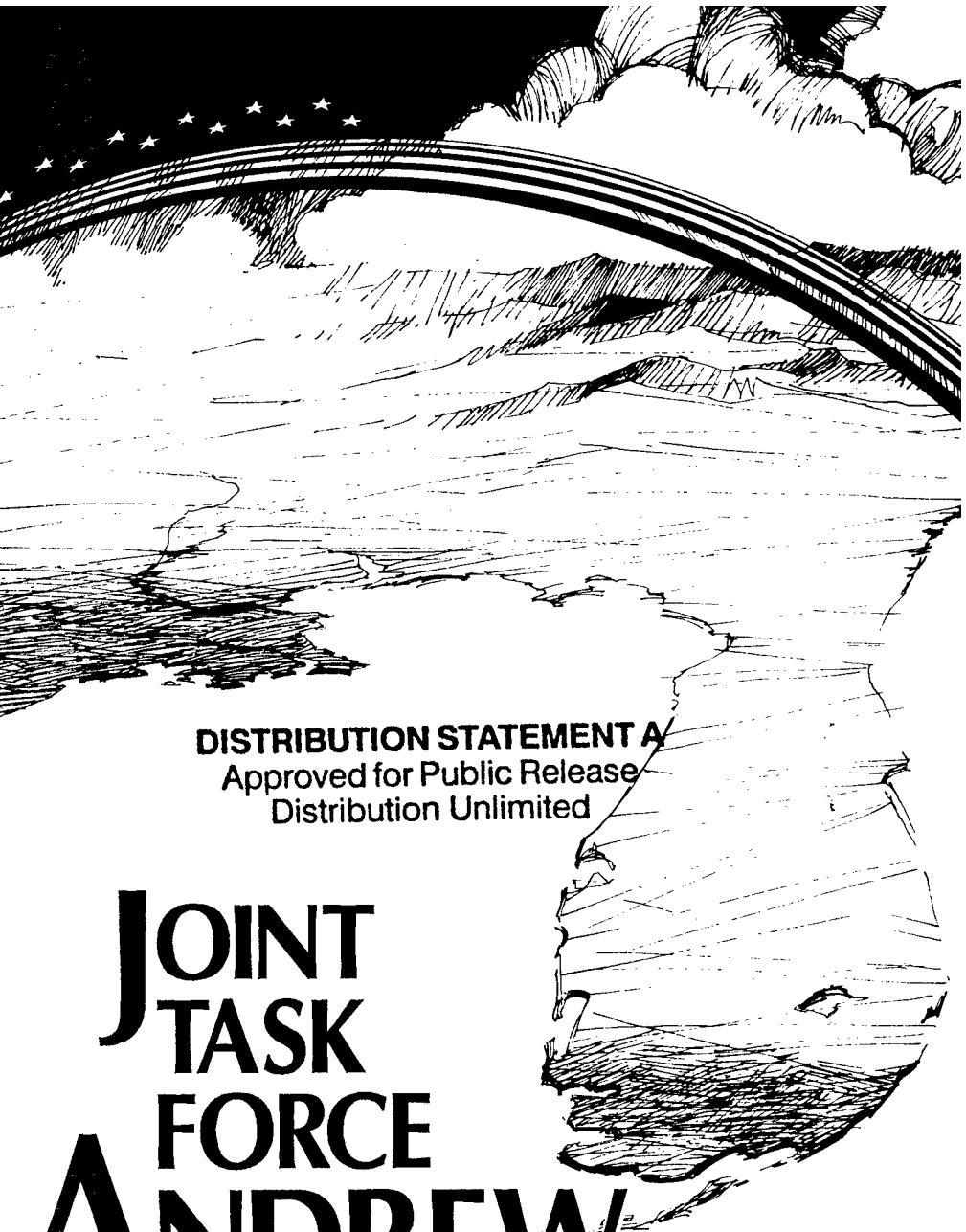


JOINT TASK FORCE ANDREW

Leader's safety guide

FOR FURTHUR INFORMATION CONCERNING DISTRIBUTION CALL (703) 767-8040

PLEASE CHECK THE APPROPRIATE BLOCK BELOW:

AO # _____

☐ _____ copies are being forwarded. Indicate whether Statement A. B. C. D. E, F. or X applies.

☒ DISTRIBUTION STATEMENT A:
APPROVED FOR PUBLIC RELEASE: DISTRIBUTION IS UNLIMITED

☐ DISTRIBUTION STATEMENT B:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES ONLY; (Indicate Reason and Date). OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT C:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES AND THEIR CONTRACTORS; (Indicate Reason and Date). OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT D:
DISTRIBUTION AUTHORIZED TO DoD AND U.S. DoD CONTRACTORS ONLY; (Indicate Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT E:
DISTRIBUTION AUTHORIZED TO DoD COMPONENTS ONLY; (Indicate Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT F:
FURTHER DISSEMINATION ONLY AS DIRECTED BY (Indicate Controlling DoD Office and Date) or HIGHER DoD AUTHORITY.

☐ DISTRIBUTION STATEMENT X:
DISTRIBUTION AUTHORIZED TO U.S GOVERNMENT AGENCIES AND PRIVATE INDIVIDUALS OR ENTERPRISES ELIGIBLE TO OBTAIN EXPORT-CONTROLLED TECHNICAL DATA IN ACCORDANCE WITH DoD DIRECTIVE 5230.25. WITHHOLDING OF UNCLASSIFIED TECHNICAL DAT \FROM PUBLIC DISCLOSURE. 6 Nov 1984 (indicate date of determination). CONTROLLING DoD OFFICE IS (Indicate Controlling DoD Office).

☐ This document was previously forwarded to DTIC on _____ (date) and the AD number is _____

☐ In accordance with provisions of DoD instructions. the document requested is not supplied because:

☐ It will be published at a later date. (Enter approximate date. if known).

☐ Other. (Give Reason)

DoD Directive 5230.24, "Distribution Statements on Technical Documents," 18 Mar 87, contains seven distribution statements, as described briefly above. Technical Documents must be assigned distribution statements.

Cynthia Gleisberg
Print or Type Name

DSN: 288-558-7924
Telephone Number

Cynthia Gleisberg
Authorized Signature/Date

Foreword

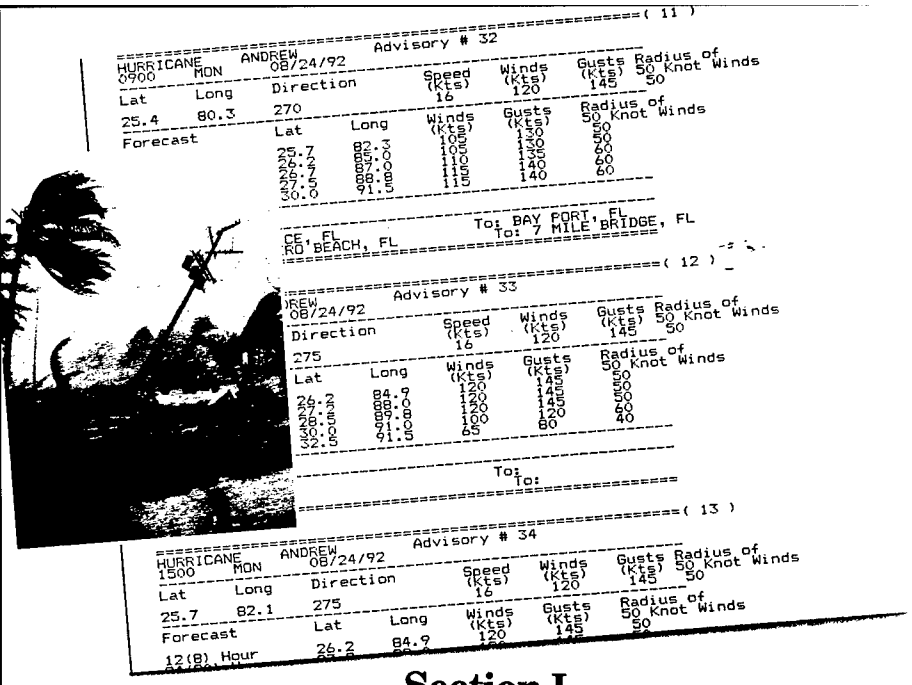
Safety is the state of mind by which leaders at all levels contribute to force protection. We have to maintain vigilance to ensure we do all we can to prevent accidental losses of soldiers, sailors, marines, airmen, the public, and equipment.

I have directed the JTF staff to integrate safety into all operations through the practice of risk management. I will accept no unnecessary risk.

Our mission to support the humanitarian relief operations in Southern Florida is extremely important, but not worth the loss of a single person. I expect leaders at all levels to enforce as well as follow the safety standards expected of our soldiers.

SAMUEL E. EBBESEN
Lieutenant General, USA
Joint Task Force Andrew

Table of Contents



Section I

Safety Alerts

Experience thus far in Operation Andrew has highlighted certain unsafe situations, some of which have led to accidents. This section offers suggestions on ways to eliminate or control hazards before they cause an accident.

Deployment

Situation: Individuals abandoning safety in an effort to perform mission.

- If standards do not exist, establish them.
- Establish a command climate from the onset that promotes safety. Begin by establishing a safety network, designating safety personnel.
- Enforce standards; require all personnel to perform to standard in all operations.

Situation: Personnel working in port without hardhats, backing vehicles without ground guides,

and speeding in work areas.

- Enforce standards.

Human factors

Situation: Travel causes dehydration and fatigue.

- Ensure that arriving troops are given opportunity to rehydrate and rest before being assigned duties.

Situation: Soldiers performing strenuous manual labor.

- Remind soldiers to avoid strains and lifting injuries by lifting with their legs, not their backs.
- Remind soldiers to use teamwork.

Aviation operations

Situation: NVG operations.

- Operate according to the crawl-before-you-walk, walk-before-you-run philosophy, especially in an unfamiliar environment.
- Conduct detailed planning and mission briefings regardless of pilot experience.
- Establish all crewmember duties.
- Identify crew coordination requirements, especially during critical phases of mission.
- Remind crews that continuous scanning is a must and that the pilot on the controls must stay outside.
- Require that all crewmembers assist in obstacle clearance.
- Remind aircrews that airspeeds must be adjusted downward during low illumination and visibility conditions and in areas of little or no contrast (go low, go slow).

Situation: Emergency Helicopter Instrument Recovery Procedures (EHIRP).

- Establish EHIRP for area of operation.
- Include EHIRP in mission briefings (unit SOP).
- Spell out crew duties and crew coordination requirements.
- Conduct unannounced IMC during checkrides.

Situation: Area operation surveys.

- Survey area of operation, and establish hazard maps and restricted flight areas as first order of business.
- Brief hazards and obstacles for every mission.
- Brief all crewmembers on their responsibility for scanning to detect hazards and obstacles and to inform pilot on controls.

Ground operations

Situation: Vehicle operations resulting in accidents.

- Caution soldiers to drive defensively.
- Remind drivers to clear all sides before turning.
- Caution drivers to use extra care when operating off improved roads.
- Enforce safety belt requirements.
- Remind drivers that driving too fast for conditions is a primary cause of accidents.
- Train drivers of M915 series vehicles in braking procedures.
- Caution drivers that roads, bridges, and overpasses may not be posted with weight or height restrictions.
- Require safety briefings for senior occupants as well as vehicle drivers.
- Require the use of 10-foot inflator gauge for inflating and deflating split-rim tires.

Situation: Unsafe fuel handling and burning.

- Use FM 21-10 for guidance on proper fuel mixtures.
- Ensure that fuel is not used as a substitute for cleaning solvents.
- Prohibit the burning of aerosol cans and unopened MRE packages; they will explode.

Situation: Large electrical transformers may contain PCBs, cancer-causing chemicals. In addition, electrical lines may be energized and present a shock hazard. Ensure that personnel—

- Do not attempt to move transformers during cleanup.

• Mark transformers and report their locations to the chain of command.
• Do not touch or operate near downed power lines.

Situation: There are many sources of hazardous material. Remind personnel to—

• Avoid areas near damaged propane tanks, oil containers, or other chemical drums.
• Mark and report suspected waste dump sites to the chain of command, and avoid the area.

Situation: Civilian injuries have been reported as a result of using chain saws. Military personnel required to use chain saws must be aware of the following:

• Do not cut toward the body.
• Cut with the blade where it enters the drive body.
• To reduce kick-back, avoid cutting with the tip of the saw.
• Do not refuel a hot saw.
• Do not cut into the ground.
• Check for nails, wire, and other metal objects before cutting.

Situation: Frequent thunderstorms occur in this area. Personnel in the open may be struck by lightning. Warn personnel to—

• Seek shelter during thunderstorms. Buildings and vehicles are good shelters.
• Avoid trees, towers, and other tall objects; seek shelter in low areas.
• Use correct emergency posture: on knees, bent forward, with hands resting on knees.
• Ground fixed and tactical communications equipment.

Situation: Motor vehicle operations present the greatest hazard to Operation Andrew personnel. Remind them to—

• Use safety belts when installed.
• Never ride on the outside of a vehicle (e.g., sitting in

cupola of HMMWV or sitting on side rails of truck).

- Secure the tailgate and safety strap on cargo vehicles when transporting personnel.
- Keep heads, hands, and other body parts inside the vehicle.
- Secure baggage and loads to prevent movement.

Situation: Communications antennas present special hazards. Ensure that personnel—

- Keep vehicle antennas secured to prevent contact with power lines and other objects.
- Keep vehicle antenna tips covered to prevent injury and damage.
- Maintain a distance of at least twice the height of the antenna from power lines when erecting any type of antenna.

Situation: Frequent convoy operations will be conducted during the operation.

- Ensure vehicles are equipped with highway warning devices and fire extinguishers.
- Ensure radio antennas are tied down and tips covered with a protective ball.
- Require that service drive lights be used during all convoys.
- Brief drivers transporting hazardous materials on actions to be taken in the event of an accident.

Situation: Many electrical power lines were downed by Hurricane Andrew. Ensure personnel know that—

- Downed power lines may be energized. DO NOT TOUCH.
- As power is resupplied, emergency generators must come off line. Only qualified utility or engineer personnel will conduct the changeover.

Situation: At night, tent stakes and support ropes cannot be seen.

- Protect stakes with sandbags or similar covers.
- Mark safe walking lanes.

Situation: Personnel assisting in clearing home sites face a variety of hazards. Remind them to—

- Be aware of their surroundings and not enter damaged structures.
- Be alert for exposed electrical, gas, and other utility lines.
- Wear gloves and other protective clothing.
- Avoid moving or tampering with propane tanks.

Section II

Risk Management

Risk management is the *process* of making operations safer without compromising the mission. Accident experience shows that mission-stopper accidents occur when victims are ignorant of hazards and countermeasures or when *directed* countermeasures are ignored. The greatest effort should be in hazard identification and countermeasure enforcement. This section provides leaders guidance on integrating the risk management approach into unit operations.

Rules

Four rules guide the risk management process:

- **Integrate risk management into planning.** Risk management begins with planning and readily complements current Army processes.
- **Accept no unnecessary risks.** The leader who has the authority to accept a risk has the responsibility to protect his soldiers from unnecessary risks. An unnecessary risk is one that, if eliminated, still allows mission accomplishment.

• **Make risk decisions at the proper level.** Make risk decisions at a level consistent with the commander's guidance. The leader responsible for the mission should make the risk decisions.

• **Accept risks if benefits outweigh the costs.** Leaders must take necessary risks to accomplish the mission. Leaders must understand that risk-taking requires a decision-making process that balances mission benefits with costs.

Process

There are five steps to the risk-management process.

• **Identify the hazards.** The hazards are the potential sources of danger that could be encountered while performing a task or mission. For example, a river crossing is anticipated while conducting a foot patrol. Factors that determine hazards are water depth and current, hypothermia, fatigue, debris on and under water, change in conditions caused by weather, and swimming ability of the soldiers. There could be other, less obvious hazards that would become apparent during planning. Leaders should seek to identify all these hazards before the operation.

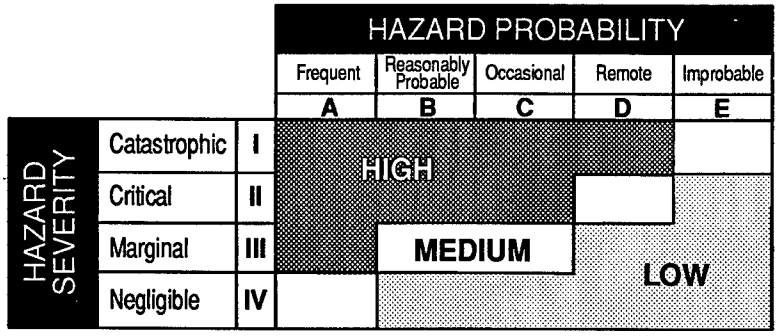
• **Assess the hazards.** Identified hazards must be assessed to determine their cumulative effect on the mission or objective. Each of the hazards is analyzed to determine the probability of its causing a problem and the severity of the consequences should such a problem occur. Exercising judgment on how to eliminate or reduce hazards to lessen the overall risk is inherent in the risk assessment process. This step concludes with a risk assessment that describes the impact of the combined hazards. The result is a statement that quantifies the risk associated with the operation: high, medium, or low.

• **Make a risk decision.** Leaders are expected to weigh the risk against the benefits of performing an operation; however, the mentality is more often mission-first. Keep in mind that unnecessary risk can be just as great a hindrance to mission accomplishment as enemy action. Risk decisions are made at a level of command that

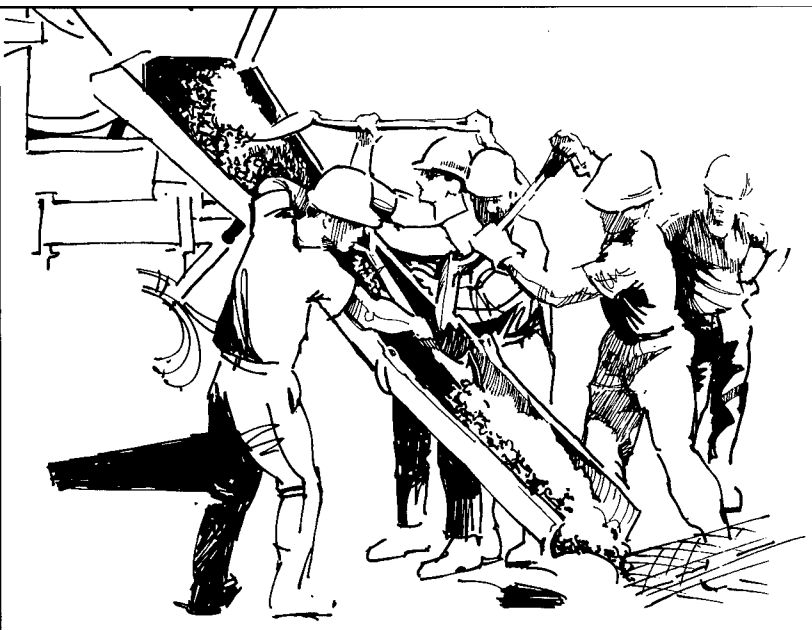
corresponds to the degree of risk. As such, guidance should be established as to who makes which risk decisions. For example, high-risk squad actions may be elevated to the company commander for acceptance or denial. A brigade commander may direct that company-level risk decisions be made by the company commander if the risk is low, battalion commander if the risk is medium, and brigade commander if the risk is high. In the case of battalion-level decisions, the chain may go from battalion to brigade to division.

• **Implement controls.** The controls established as a result of the first three steps are implemented in step four. Included is leader action to reduce or eliminate hazards. Controls may be as substantial as writing an SOP or as simple as conducting a short safety briefing. In the river crossing scenario, the leader would brief his subordinates on the specifics of what he has decided. He would then require each subordinate to brief back the requirements to ensure that all is understood.

• **Supervise.** Supervision in this sense goes beyond ensuring that people do what is expected of them. It includes following up during and after an action to ensure that all went according to plan, reevaluating the plan or making adjustments as required to accommodate unforeseen issues, and incorporating lessons learned for future use.



Hazard Risk Assessment Code	Risk Level
IA-ID, IIA-IIC, IIIA	HIGH
IE, IID, IIIB-IIIC, IVA	MEDIUM
IIE, IIID-IIIE, IVB-IVE	LOW



Section III

Human Factors

There are ways leaders can reduce hazards to personnel during Operation Andrew. This section discusses some of them.

Supervision

Statistics show that 80 percent of all accidents are caused by human error, and supervision is the key to preventing human error. Simply put, leaders can reduce human error by establishing sound standards and consistently enforcing them.

Failure to enforce a standard serves to establish a new, lower standard that may one day result in an accident. If, for example, you sit in the passenger seat and allow a driver to operate a vehicle too fast for conditions, you have failed to supervise, and you have failed in your leadership responsibility. You might make *that* trip; however, you've set the stage for a future accident. Consistent enforcement demonstrates "tough caring," which is looking out for the welfare of soldiers.

Buddy system
Establish a buddy system and provide guidance on the issues buddies should help each other with. Examples include enforcement of water consumption, eating, personal hygiene, watching for fatigue, sickness, heat injury, cold injury, and swimming. Don't forget that leaders also need a buddy, because leaders frequently try to tough-out injuries to remain in the action.

Hot weather

Water consumption/salt loss
In extreme heat, the body is cooled by sweat. Since sunburn inhibits sweating, every precaution must be taken to prevent sunburn. Common sense dictates maximum use of shade, sunscreen, and/or clothing that covers as much exposed skin as possible.

When the body loses water, it also loses salt. Salt should be replaced by normal consumption of food. Do not use salt tablets.

An individual may lose more than 1 quart of water per hour through sweating. Water loss must be replaced by frequent intake of small amounts of water. Water should be sipped, not gulped. Do not conserve water. Soldiers *must* drink even when they are not thirsty! Thirst is not an adequate indicator of dehydration.

The following chart is a guideline for water requirements:

Activity	Typical Duties	Quarts per person per day for drinking WBGT (less than 80° / more than 80°)	
Light	Desk work, guard work, radio operating	6	9
Moderate	Route march on level ground	9	12
Heavy	Roofing, construction work, erecting tents	12	15

Following these requirements will not necessarily prevent dehydration. Dark urine is an indicator of dehydration.

Alcohol and soft drinks are not substitutes for water. Alcohol exacerbates dehydration, and soft drinks are not absorbed as rapidly as water into body tissue. Soft drinks containing salts (e.g., Gatorade) may increase individuals' water requirements.

Soldiers who are overweight, dieting, or past heat casualties are more prone to heat injuries. As such, their activities must be closely monitored. Leaders:

- Enforce hydration and monitor water use.
- Provide cool water when possible.
- Enforce work/rest cycles.
- Watch for signs of heat injury (know what they are).
- Know individual physical condition and assign appropriate work.
- Establish and ensure use of the buddy system.

Signs, symptoms, and first aid

When prevention fails, it is critical that everyone be able to recognize and treat heat injuries. Following is a discussion of the most common injuries:

Heat cramps are caused primarily by excessive loss of salt from the body.

Symptoms: Muscle cramps of the abdomen, legs, or arms.

First-aid: Move the victim to shade and loosen clothing; dissolve 1/4-teaspoon table salt in one quart of water, and have the victim slowly drink at least one quart of the salt solution; seek medical treatment.

Heat exhaustion is caused by excessive salt depletion and dehydration.

Symptoms: Profuse sweating, headache, tingling sensation in the extremities, weakness, loss of appetite, dizziness, nausea, cramps, chills, and rapid breathing.

First-aid: Move victim to shade, loosen or remove clothing, elevate legs, pour water on the victim, have the victim drink water, and fan; seek medical treatment.

Heatstroke is a medical emergency; immediate action is required.

Symptoms: Generally patterned after heat exhaustion; however, skin will be hot and dry; victim may suddenly lose consciousness and have seizures.

First-aid: Move victim to shade, immerse in water if possible (ice water is even better), douse with water, and fan; seek immediate medical attention; elevate feet; ensure cooling process is continued during transport to medical facility.

Fatigue

Fatigue causes accidents. After 48 to 72 hours without sleep, soldiers become militarily ineffective. So, the best measure against fatigue is sleep. Water consumption, diet, physical conditioning, personal hygiene, and meaningful work all impact on fatigue. Ensure the impact is positive.

Watch for the following symptoms of fatigue:

- Headaches.
- Poor personal hygiene.
- Impatience/irritability.
- Loss of appetite.
- Inability to focus on task at hand.
- Outright physical exhaustion.
- Inability to make decisions.

These symptoms manifest themselves in—

- Increased errors.
- Difficulty in following instructions.
- Lack of motivation.
- Carelessness.

All this may translate into unnecessary risk-taking or shortcuts to get the job done—an open invitation for an accident.

Facts about sleep deprivation

- You cannot train to overcome sleep loss.
- Tasks that are uninteresting and take a long time are extremely conducive to sleep.

• Performance of mental tasks requiring calculations, creativity, and ability to plan ahead declines by 25 percent for every 24-hour period of semi-continuous work without sleep.

• The abilities of leaders are degraded by sleep loss, impacting on quick and effective responses to changing battlefield conditions.

• Tasks that have been well-learned and repeatedly practiced are more resistant to sleep-loss effects (select the best trained to perform critical tasks).

• The ability to learn *new* information is compromised by sleep loss.

• Leadership ability cannot overcome sleep loss.

• Sleep loss over time (greater than 2 days) has a cumulative effect.

Guidelines for sleep plans

• 6-8 hours sleep each night will maintain mental task performance indefinitely.

• 3-4 hours sleep each night will maintain mental task performance for 5-6 days.

• Less than 4 hours sleep each night (over a 3- to 6-day period) will impair military effectiveness.

• Best sleep periods, given limited choice, are 0300-0600 and 1600-1900.

• Provide for a *minimum* of 4-5 hours quality sleep (uninterrupted); however, after 6-7 days, accumulated sleep loss will equate to performance of 48 hours without sleep.

• After 24-36 hours without sleep, decisions, calculations, etc., should be cross-checked by a second person. Use a mix of rested/unrested soldiers as check and balance.

• Allow for naps as often as possible. Four 1-hour naps in a 24-hour period are as beneficial as 4 hours' sleep; however, accumulative sleep loss is more severe with fragmented sleep.

• Sleep plans should include provisions to recover from sleep loss.

  ❑ 12 hours of sleep/rest (at least 8-10 hours sleep) are required after 36-48 hours acute sleep loss.

❑ 24 hours of sleep/rest (at least 15 hours sleep) are required after 36-48 hours sleep loss under conditions of high workload (12-16 hours per day). This is particularly important for commanders/staff with high mental task workloads.

❑ 2-3 days sleep/rest are required after 72-96 hours sleep loss. The sleep/rest period means 8-10 hours sleep per day and light duty.

Personal injuries

Eyes
Precautions should be taken to protect the eyes by wearing protective lenses, goggles, or face shields when the job calls for it. Activities most likely to produce eye injuries are chain-saw work, carpentry, metal work, and motor pool/maintenance work.

Ears
Leaders must enforce the use of hearing protection when operating heavy equipment, when on board Army aircraft, when using chain saws, and when operating generators.

Head
Helmets/hardhats should be worn in construction areas in accordance with unit requirements.

Hands
Rings are a common source of personal injury. Soldiers frequently catch rings on the tailgate of vehicles while dismounting, causing severe hand injuries.

Back
In most cases, back injuries occur when individuals overextend themselves. Leaders must remind soldiers to get help when lifting heavy objects and to lift with their legs, not their backs.

Feet
Leaders must enforce the wear of protective boots in areas

that require toe protection (e.g., maintenance, engineer, warehousing, and materiel-handling areas).

Health and hygiene

Water

- Ensure water is treated; serious diseases can be transmitted by untreated water.
- Schistosomiasis is a common parasite in bodies of water. Do not go into water unless it is necessary or an area approved by the chain of command.
- Water in trailers should have the chlorine level maintained at 5 ppm.

Laundry and bath

- Laundry operations require equipment to be operated at specific temperatures; to prevent fires, ensure that temperatures listed in the appropriate operators manual are not exceeded.
- Ensure that laundry units operated inside tents have adequate ventilation.
- Ensure that high-voltage laundry units are grounded and that circuits are not bypassed.
- Ensure that operators are using fuels prescribed in the appropriate operators manual to prevent overheating and fire hazards.

Food

- Keep perishable foods below 45°F. or above 140°F. prior to serving.
- Dispose of perishable foods held in insulated containers more than 4 hours.

Critters

Snake and insect bites

Bottom line—tell your personnel to leave snakes alone. There are poisonous snakes in the region, but bites from nonpoisonous snakes can also be harmful if not properly

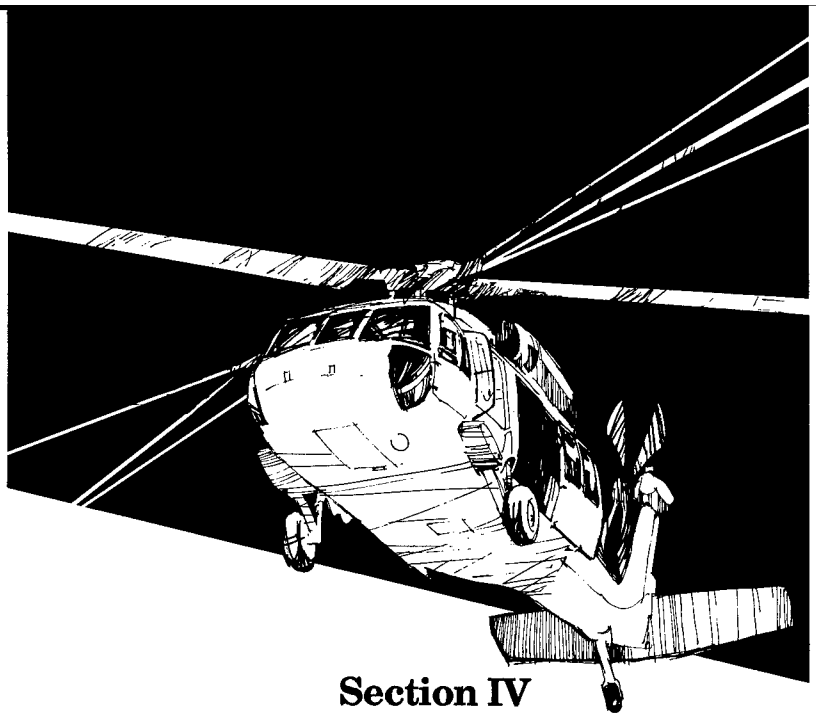
cared for and become infected. Anyone bitten should seek medical help immediately. Do not treat snakebites with the cut/suck method.

Spiders and mosquitoes can cause illness and infected wounds. Tell your soldiers to shake out their clothing before dressing and to check boots, etc., before putting them on. Where possible, boots should be placed off the ground or inside a waterproof bag or other container.

Animals
Animals may be carriers of rabies. Do not taunt or play with animals.

Respiratory

Burning brush
Some species of brush such as oleander are poisonous. Inhalation of smoke from these plants may cause respiratory problems, including sickness and, in extreme cases, death. Warn personnel to stay out of the smoke from any burning material.



Section IV

Aviation Operations

This section addresses areas of concern in aviation operations. Listed under each area are actions to take to reduce the hazards.

All aircraft

Maintenance

- Use caution when touching aircraft surfaces or metal tools that have been exposed to the sun. Wear gloves and use mats or pads when practical to prevent burns and blisters.
- Inspect seals, tires, and such frequently for blisters and other signs of deterioration.
- Inspect vibration isolators frequently and replace where cracking or permanent set is excessive.
- Inspect and clean flaps, control hinges, pulleys, bearings, worm gears, cowl slides, and landing gear regularly to arrest corrosive action.
- Inspect dead air spaces in fuselage at regular intervals.

• Clean instrument filters thoroughly at regular intervals. Replace wornout filters promptly.

• Install protective covers and dust excluder plugs on all engine openings, vents, air intakes, exhaust outlets, breathers, propeller hubs and feathering domes, cowls, and other vital openings.

• Make all possible ground checks before starting engine. Inspect controls for freedom of movement to ensure no binding.

• Never use dirty tools on aircraft.

• Run up engines on a hard surface such as a landing mat or a sand- and dust-free area to prevent sandblasting.

Depth perception at night

• Drop chem light stick on ground before landing to overcome illusion that aircraft is higher above ground than it actually is.

• Remind pilots that radar altimeters provide the only effective reference to properly gauge altitude.

• Monitor shadows cast by near objects such as landing gear or skid shadows during hover.

• Keep windscreen and door windows clean.

Overflying NVGs

• Slow airspeed to give more reaction time in areas of low contrast. In addition, terrain becomes more clearly defined and contrast is greater when the aircraft is flown closer to the ground.

Visual scan

• Do not stop scanning to channelize attention inside or outside aircraft. Scan stop of more than 3 seconds is risky. If pilot on controls must stop scanning, transfer controls; if pilot not on controls decides to stop scanning, announce decision.

Wire strikes

• PIC—Conduct thorough hazard and obstacle briefing before each mission.

• Aircrews—

❑ Mark all known wires on hazard maps.

❑ Ensure maximum crew coordination in searching out and calling out wires.

❑ Go slow when you go low.

• Aviation safety officers—Promote wire strike prevention awareness in safety briefings.

High intensity radio transmission area (HIRTA)

• Mission planning should include consideration of potential effects of an electromagnetic environment.

• Report suspected instances of electromagnetic interference.

• Review classified HIRTA guidance information (CDRAVSCOM message, AMSAV-E, 091845Z Jan 89).

Helicopters

Maintenance

• Keep aircraft clean, thus reducing wear and tear caused by a buildup of dirt.

• Use protective covers between flights to protect aircraft from excess heat and to stop dirt from getting into moving parts.

• Wipe oil and grease off engine decks and cowling-covered parts.

• Make sure all filters and air cleaners are inspected and cleaned daily.

• Cover radios and receivers with dust covers when possible. Clean ventilating ports and channels to stop overheating.

• Lubricate main and tail rotors as per appropriate TM.

• Replace damaged sealant around windows, doors, and chin bubbles.

• Keep windows clean and covered when aircraft are parked.

• Don't let covers touch windshield. Protect windows with styrofoam, newspaper, cardboard, or other nonabrasive material—then attach cover.

• Add oil and hydraulic fluid directly from original unopened containers to help stop dirt from getting into helicopter's lubrication and hydraulic systems. Dispose of partially used containers.

• Wipe off excess grease every time lubricant is applied. Grease attracts dirt, forming a paste that grinds and wears lubricated parts.

Pressure/density altitude; weight and balance; wind

• Compute density altitude (DA) before weight and balance.

• Always assume DA to be a little higher than calculated.

• Study DA tables in operator's manual.

• Remember that helicopter performance can be affected as soon as 1 hour after sunrise because of temperature extremes affecting DA.

• Consider the effect wind direction has on aircraft control during takeoff and landing.

Refueling

• High-frequency radios will not be operated within 100 feet of aircraft being refueled.

• Be aware of fire hazard possibility from static electricity. Connecting the nozzle bonding wire before opening the fuel cap will prevent a static arc from occurring in the presence of fuel vapor and significantly reduce the fire hazard.

• Ensure personnel use extreme care when handling aviation fuel at high temperatures (120°F can be reached on concrete ramps) to prevent possible sparks and explosion.

• Ensure personnel use nonsparking tools when working with fuel containers.

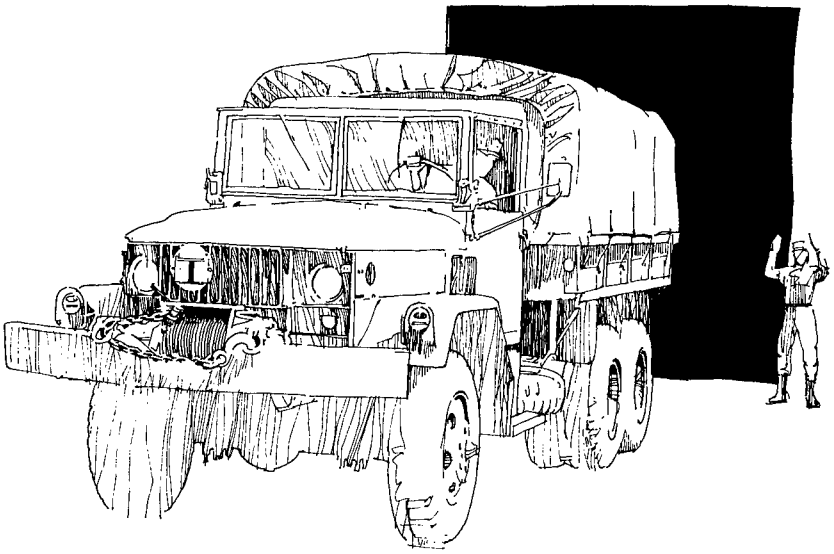
• Look for and correct improper grounding points, deteriorated or leaking hoses, leaking nozzles, incorrect sampling procedures, improper storage or dumping of waste POL products, lack of personal equipment for refueling personnel, no water at refueling site, unserviceable fire extinguishers, and no controlled access into and out of refueling points.

• Remind personnel that fuel expands in very hot temperatures. An aircraft fueled at night or in the early

morning may vent fuel overboard or sustain damage due to expanding fuel.

Foreign object damage

- Ensure that bivouac areas are clear of aircraft approach paths, landing pads, and departure paths to prevent loose items from being affected by rotor wash and injuring personnel or damaging aircraft.
- Require that FOD checks be performed following maintenance to reduce the possibility of loose items being ingested by aircraft engines.
- Ensure that approach/hover/departure is high enough not to affect loose debris in damaged areas. Avoid areas littered with items such as metal roofing sheets or plywood, which could become airborne and fly through the rotor system or injure personnel in the area.
- Recon unimproved landing and pickup zones for FOD prior to use.



Section V

Ground Operations

This section addresses areas of concern in ground operations. Listed under each area are actions leaders should take to reduce the hazards.

All vehicles

PMCS

- Stress that PMCS is critical.
- Stress that drivers must perform special requirements covered in the "Operating Under Unusual Conditions" section of their respective operators manual.

Speed

- Establish and enforce safe speed limits for various road and environmental conditions.

Safety belts

- Enforce the use of safety belts.

Driver selection

- Pair an experienced driver with an inexperienced one to provide supervision and hands-on training.

Rollovers

- Instruct drivers on conditions that can lead to rollovers: steep slopes, ditches, loose sand, etc.
- Enforce use of safety belts by crew and passengers.
- Ensure equipment is secure to prevent injury from falling equipment or cargo.
- Enforce posted and briefed speed limits.
- Remind drivers to slow down in limited visibility, on rough terrain, and during inclement weather.

Backing

- Ensure drivers properly use ground guides (see section on ground guiding).

Rear-end collisions

- Stress safe following distance.
- Establish procedures for vehicle stops and breakdowns to warn approaching vehicles.

Passengers/cargo transport

- Supervise cargo loading to ensure load is secured and weight is correctly distributed.
- Enforce wear of safety belts.
- Use fixed seating in truck cargo beds.
- In cargo beds without fixed seating, ensure passengers remain seated within truck body.

Forklifts

General

- Require drivers to wear safety belts.
- Enforce the requirement to use ground guides in congested areas.
- Do not allow riders.
- Ensure personnel know and stay within forklift load limits.

- Ensure personnel chock wheels before unloading.
- Ensure personnel know not to park on a grade.

Rollover procedures

- Stay in seat.
- Grip the wheel.
- Brace feet.
- Don't jump.

Convoys

Speed

- Establish and enforce safe convoy and catch-up speeds for expected road and environmental conditions. Include in pre-march briefing.
- Set speeds based on personnel, training, terrain, environment, and equipment.

Rear-end collisions

- Provide adequate driver rest before starting.
- Establish speed and following distance guidelines. Increase following distance in bad weather and darkness. Include in pre-march briefing.
- Establish procedures for vehicle stops and breakdowns to warn approaching vehicles.

Loss of control/rollovers

- Use experienced drivers in difficult terrain.
- For off-road movements, when possible conduct a physical reconnaissance of the route to avoid the worst terrain hazards. Mark unavoidable hazards on strip map and include them in the pre-march briefing.
- Check loads to ensure cargo is correctly secured. Stress even load distribution, especially when traveling over sandy terrain.

Clearance

- Recon the route for bridges or underpasses that may be

too low for large vehicles.

- Recon routes for any sharp turn that might require special control measures.

Materiel failure

- Have all drivers perform PMCS before departure, during halts, and after completion.
- During halts, in addition to normal during-operation PMCS, emphasize tire condition and security of loads.
- During operation, have drivers pay particular attention to air cleaner indicator and water and transmission gauges.
- Ensure operators know proper cool-down procedures for their vehicles. Procedures are spelled out in appropriate operators manuals.
- Ensure vehicle basic issue items, pioneer tools, highway warning devices, and fire extinguisher are present on every vehicle.
- Ensure that disabled vehicles are moved completely off the roadway.

Passengers

- Enforce requirement to wear available safety belts and helmets.
- Use fixed seating in truck cargo beds.

General

- Do not place vehicles transporting troops, ammunition, or POL last in a serial or march unit.
- Ensure all prime movers and trailer brake systems are properly connected and fully operational.
- Reinforce braking and downhill driving procedures with all operators.

Weapons handling

Fratricide

- Do not tolerate horseplay.
- Ensure weapons are kept on safe.
- Remind soldiers to consider weapons loaded at all times and to check chamber often.

- Instruct soldiers to load only on command or SOP.
- Control ammo.
- Highlight danger of "cookoffs."
- Ensure that soldiers receive correct ammunition for the weapon system. Refer to the operator's manual when in doubt.

Maintenance

- Establish weapons lubrication policy.
- Require that weapons, ammo, and magazines be kept clean.
- Require that muzzles be covered to prevent clogging.
- Conduct headspace and timing in accordance with TM. Caution soldiers not to rely on memory, to always verify.

Maintenance

Tire checks

- Ensure that tires are checked often for cuts and wear.
- Remind drivers to check for rocks between duals and to check tire pressure often.

Tire repair

- Insist that mechanics always use a tire cage.
- Remind mechanics to use proper tools, to keep hands out of cage while inflating, and to use an extension.
- Remind mechanics to use the buddy system when lifting, removing, and installing large tires.

Batteries

- Remind personnel to keep air vents on caps clean to allow gas release and avoid pressure buildup.
- Ensure that personnel check levels often. Battery electrolyte water evaporates faster in hot weather.
- Ensure personnel adjust battery electrolyte levels during the day. (When batteries cool, levels will lower slightly and overflow will be avoided.)
- Require the use of slave cables. Only as a last resort should jumper cables be used. Remind personnel to beware of sparks as jumper cables are attached around the battery's

gaseous vapors.

- Ensure mechanics adjust voltage regulators to lowest setting possible to avoid overcharging.
- Require use of face shields, goggles, and aprons when servicing batteries.

Recovery operations

- Remind recovery personnel to use a braking vehicle when required by TM and to always use correct hookup procedures.
- Ensure that all vehicles are equipped for self-recovery as appropriate (tow ropes/cables and rope ladders, pierced steel planking or other traction material to place under tires).
- Caution soldiers to keep hands and clothing at least 5 feet from winch when rewinding cable after recovery operations.
- Enforce safe towing speeds.
- Match driver to mission.
- Fabricate ground support devices for outrigger support in soft soil.

Eye protection

- Require goggles for work under vehicles.
- Require that the right tool be used for every job.

POL

- Remind personnel to use extreme care when changing hot lubricants (they can burn).
- Take care to prevent contamination of POL.

Brakes

- Remind mechanics to use low air pressure to remove sand/dust from brake drum areas.

Radiators/coolant

- Remind personnel to use caution when removing radiator caps from hot vehicles and to check radiator fluids often to avoid overheating. (Use hand to remove cap only if cool to touch. Turn cap slowly to release pressure.)

• Remind personnel to keep radiators and airflow areas clean and free of debris to avoid rupture of radiators.

• Require that radiator caps be tested often. (Caps control radiator pressure.)

Grounding

• Ensure that portable electric power tools and power generation equipment are properly grounded (see section on grounding).

Communications

Antennas

• Remind personnel that, when erecting RC-292/OE254 antennas, they must stay *twice* the distance from powerlines as the length of the antenna.

• Stress that soldiers have been killed by falling antenna head sections.

• Require that personnel wear eye protection, head protection, and gloves when erecting antennas.

• Allow no substitutes for antenna mast sections (camouflage poles have been a fatal alternative).

• If, for any reason, an assembled antenna head must be left on the ground, ensure it is guarded to prevent others from walking into it. Tip protectors are a must.

Power lines

• Identify power lines in operational areas to *all* soldiers.

• Tie down antennas when in areas of power lines (antenna tip should be no lower than 7 feet to preclude eye injuries). Use tip protectors at all times.

• Warn soldiers never to throw WD1 over power lines.

Electrical storms

• If possible, do not operate radios, telephones, switchboards.

• Disconnect electrical equipment from power sources and antennas if the situation permits.

• If equipment *must* be used, converse as little as possible. Return call after storm.

Grounding

• Ensure that *all* electrical equipment is grounded (see section below).

Grounding

General

• Instruct personnel to dig/drive ground rods to a depth of 6 feet.

• Remind personnel to keep soil moist around grounding rods to increase conductivity and to keep ground rods, straps, and connections free of paint or oils.

• See FM 20-31 for further guidance on grounding.

Fuel handling

Grounding and bonding

• Ensure proper grounding and bonding procedures are always used (see grounding section above).

• Remind personnel that hot conditions contribute to the generation of static electricity.

• Remind personnel to ground themselves by touching a large metal object before handling fuel hoses and nozzles.

• Ensure that grounding and bonding equipment is inspected regularly.

Tank and pump units

• Remind personnel to—

- ❑ Lubricate equipment more often.
- ❑ Use light oil instead of grease.
- ❑ Keep caps and covers on systems.
- ❑ Keep pump engines clean.
- ❑ Purge tanks, lines, and filter separators at the beginning and end of the day.
- ❑ Recirculate all fuels to remove water.
- ❑ Keep pressure relief valves clean (compressed air).

❑ Watch for corrosion.

Fuel system supply point

- Remind personnel to—
  - ❑ Not fill collapsible bags to full capacity (allow for expansion).
  - ❑ Leave hose line valves slightly open to allow for fuel expansion into tankage.
  - ❑ Keep pump engines clean.
  - ❑ Lubricate pumps more often.
  - ❑ Use dust caps and plugs.

Refueling operation

- Ensure proper bonding and grounding procedures are used.
- Remind personnel to—
  - ❑ Not fill vehicles to full capacity (allow for expansion).
  - ❑ Keep tank truck hatches open during refueling to allow vapors to escape.
  - ❑ Stay on the windward side to prevent being overcome by fuel vapors.
  - ❑ Close hatches immediately after refueling.
  - ❑ Use bottom load procedures when possible. (If top loading is used, use extreme caution and start the refueling procedure at a slow rate until the level of fuel has covered the hose. Thereafter, increase the flow rate slowly.)

Protective clothing and equipment

- Remind personnel not to wear nylon clothing. (Nylon will build up electrostatic charges.)
- Remind personnel to wear fuel-resistant or rubber gloves and protective clothing to keep fuel off the skin. (Skin is highly susceptible to drying, cracking, and peeling if it comes in contact with fuel.)

Bivouac

Sleeping locations

- Establish a designated sleeping area. If situation permits,

mark perimeter with engineer tape or chem lights.

• Post unit perimeter security personnel equipped with lights for signaling. Ensure they have been thoroughly briefed on their duties and responsibilities.

• Ensure vehicles are *not* parked where they can roll toward sleeping personnel or on an incline without chocks.

• Brief all soldiers on correct driving/sleeping procedures during hours of darkness.

Dismount points

• Establish dismount points beyond which vehicles may not move without ground guides.

Ground guiding

• Require all vehicles to use ground guides, especially during periods of darkness and reduced visibility.

• Require tracked vehicles to use two ground guides when moving within or through an assembly area at any time.

Tents

• Establish fire protection plans and evacuation procedures.

• Ensure operable fire extinguishers are accessible and that operators are assigned and knowledgeable.

• Require that electrical circuits be routinely inspected for possible overload condition.

• Establish and enforce smoking areas.

Mess operations

Sanitation

• Ensure all food waste is properly disposed of.

• Ensure food preparation area is at least 100 meters from latrines and 50 meters from incinerators.

• Ensure food is protected from contamination.

• Monitor food handlers and other soldiers to ensure sanitation standards are maintained.

Fire/explosion

• Ensure kitchen fuel storage area is at least 15 meters from working area and is marked as a hazard area.

• Ensure operable fire extinguishers are accessible (with designated operators) in mess-tent area and at stove-lighting and fuel-storage areas.

• Ensure all personnel fueling/operating stoves, immersion heaters, and burners are properly trained.

• Make operators aware that increased heat will add pressure to fuel tanks and fuel cans and that particular attention should be given M2 burners.

• Keep mess-tent exits clear of obstructions.

Cuts/burns

• Remind personnel to—

❑ Keep knives sharp, and use the right knife for the job.

❑ Not use knives or other sharp implements to open tray packs (use modified can opener and P38).

❑ Tilt heated tray packs and cans to right or left when opening to prevent burns from squirting hot juices.

Materiel handling

Lift/carry procedures

• Enforce use of correct techniques—

❑ Never carry a load heavier than can be managed with ease.

❑ When in doubt, get assistance.

❑ Bend from hips and knees, not just the waist.

❑ Carry heavy objects close to body.

❑ Avoid sudden movements; move slowly and deliberately.

❑ Do not carry unbalanced loads.

Slips, trips, and falls

• Supervise operations.

• Ensure that areas are clear of obstructions and hazards, and remind personnel to use care when vision is obstructed by objects being carried.

• Caution personnel not to jump or step from cargo vehicles while carrying loads; tell them to use a ramp or get help.

• Remind personnel to use extreme care when carrying loads in loose sand or over rough surfaces.

Ground guiding

General

- Train drivers in the correct use of ground guides and *all* personnel in how to perform as ground guides.
- Stress importance of ground guides when traveling cross country during periods of limited visibility.
- Remind drivers to always use one or more ground guides while backing.
- Equip ground guides with suitable lights during periods of limited visibility/darkness.

Combat construction

Equipment operation

- Remind operators that construction equipment may be very unstable off road in sandy terrain.
- Ensure operators and supervisors check outriggers for stability. This is especially critical in sand or soil where a surface crust exists.
- Ensure safety belts are worn at all times when operating equipment.
- Ensure rollover protection systems are installed, and erect sun umbrellas on slow-speed equipment such as rollers and compactors.
- Establish operator/crew equipment rollover drills.
- Ensure ground guides are used at construction sites and in congested areas and bivouac locations.
- Ensure all prime movers and trailer brake systems are fully operational on equipment haulers and other M915 series vehicles.
- Rehearse braking and downhill driving procedures with all operators.

Construction sites

- Appoint a site safety supervisor for large earthwork or building construction sites.
- Ensure helmets or hardhats are worn on construction sites.

• Control vehicle, pedestrian, and troop access to sites.

• When excavating, ensure excavation walls are reinforced to prevent cave-ins.

• Ensure all personnel on the site know what to do in case of flash floods.

• Ensure *all* electrical equipment is grounded, and ground and bond when transfering fuel (see section on grounding).

• Ensure safety equipment (goggles, gloves, welding masks, aprons, dust respirators, etc.) is available and used.

• Ensure personnel do not shortcut safety procedures due to heat discomfort.

Heat effects on tools and materials

• Ensure gloves are worn when working with metal tools and materials exposed to heat from the sun.

• Remind personnel to—

❑ Check wire rope rigging and bolt torque specifications to minimize varying heat stress/strain effects.

❑ Keep sawdust cleaned up in carpentry areas. Sawdust fires occur frequently in hot climates.

❑ Frequently inspect wooden items such as shovels, axes, and hammers for shrinkage. Check and tighten as needed.

• Emphasize need for spill control. Remind personnel to remove contaminated soil from operational areas at once because of extreme fire and vapor hazards in hot, dry conditions.

Rail operations

Ground guides

• Ensure training is provided to all drivers in the proper use of ground guides, and to all personnel in how to act as ground guides.

• Have ground guides escort *all* vehicles *on and off* rail cars.

• Ensure ground guides are used when backing and in congested areas—two ground guides when vision is restricted and at all times for tracked vehicles.

• Remind drivers to keep ground guides in view at all times.

• Instruct ground guides *never* to walk backwards and

never to be on the same rail car as a moving vehicle.

Load teams

- Provide gloves and correct tools for the job.
- Provide instruction in proper use of tools. Inspect tools, blocking, lashing, spanners, and towbars for serviceability before use.
- Require all tank turrets and howitzer tubes to be in travel lock.
- Prohibit sleeping on, in, or around rail cars.

Power lines

- Require antennas to be removed or tied down and internal equipment secured.

Drivers

- Assign only qualified drivers.

Port operations

Ground guides/drivers

- See rail operations section.

Off-limit areas

- Ensure unauthorized personnel are not allowed in area.
- Establish and enforce no-smoking areas.

Slippery surfaces

- Remind personnel that slippery surfaces are common throughout the port area and to be continuously alert to avoid slipping.
- Remind personnel to clean up all spills as soon as possible.

General

- Identify nonswimmers and require that they wear personal flotation devices when near water.
- Ensure personnel are informed that port is a hardhat area and briefed to remain alert for movement in all directions.

• Ensure personnel are instructed never to walk or drive under a suspended load.

• Ensure personnel are briefed concerning the dangers of working around open hatches on ships. (Some of the newer ships have no hatch combings.)

Airlift operations

Ground guides/drivers

• See rail operations section.

General

• Use DD Form 2133 (Joint Airlift Inspection Record) to prepare for movement.

• Check hazardous material for compatibility. Certify any potentially hazardous materials.

• Ensure that fuel and brake systems have no leaks.

• Have personnel check vehicle and fuel containers for proper levels.

• Ensure that cargo and vehicle equipment is secured to prevent movement while in flight.

Section VI

Accident Reporting

As part of the force protection effort, accidents meeting the following minimum criteria will be reported within 24 hours to the Joint Task Force (JTF) Safety Office:

- Any person (military or civilian) injured as a result of JTF operations, who is hospitalized for more than 24 hours.
- Any property or equipment damage that exceeds an estimated value of $500, including cost of all DOD or civilian property.

The JTF Safety Office maintains a 24-hour operation. Accidents may be reported by telephoning (305) 876-1828/1829 and providing the following information:

- Person reporting the accident.
- POC phone number.
- Unit involved in accident.
- Location of accident.
- Date and time of accident.
- Name and rank of personnel involved.
- Extent of injuries.
- Type of property or equipment damage.
- Estimated cost of damage.
- Estimated environmental cost.
- Description of circumstances/events.

The JTF Safety Office will—

- Coordinate requirements for Class A and selected Class B accident investigations (DOD criteria: Class A = fatality or property/equipment damage estimated to exceed $1 million; Class B = permanent partial disability or property/equipment damage exceeding $100,000).
- Forward required accident information to the appropriate service safety centers.

Index